Application

for

United States Letters Patent

To all whom it may concern:

Be it known that,

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have invented certain new and useful improvements in

PRINTING SYSTEM, APPARATUS AND METHOD FOR
AUTOMATICALLY PRINTING RECORDS OF ELECTRONIC TRANSACTIONS

of which the following is a full, clear and exact description:

PRINTING SYSTEM, APPARATUS AND METHOD FOR AUTOMATICALLY PRINTING RECORDS OF ELECTRONIC TRANSACTIONS

FIELD

This patent specification relates to a method and system for automatically printing information relating to electronic transactions between a user side and a supplier side based on identification of a selected aspect of information regarding the electronic transaction, and to a printing apparatus for automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user side and a supplier side.

BACKGROUND

Fig. 1 represents a typical arrangement of customers and suppliers engaging in transactions electronically. Various suppliers **3** make their products and services available electronically via supplier servers **3a**. Users, or customers, communicate electronically with the suppliers **3** using personal computers **1** or computer terminals **2** (which can also be personal computers) connected as part of a local area network (LAN) **4**. These personal computers **1** and computer terminals **2** generally have access to a printing apparatus that will print data when the user requests such printing. In the case of a personal computer

1, the printing apparatus 6 is generally directly connected to the personal computer, while in the case of a computer terminal 2 in a LAN 4, the computer terminal 2 is generally connected to a shared printing apparatus 6a via the LAN 4. Printing only takes place when a user manually requests that data be printed.

Increasingly, customers are purchasing more and more of the products and services they desire through suppliers making their products available through electronic transactions performed in the environment displayed in **Fig. 1**. These transactions should be recorded and tracked in order to ensure that customers receive the goods and services that they have purchased. Such tracking is commonly accomplished through the generation of confirmation numbers by the suppliers 3 which allow customers to track the status of their purchases and serve as a confirmation that a transaction actually took place. It is desirable necessary to communicate such records generated by the suppliers to users so that users can maintain a record of their electronic transactions.

Several methods are used to communicate this information to users presently. In one method, record information is generated, e-mailed to the user and then manually printed by the user via a manual direction to print the record on a printing apparatus on the user side of the communication. In another method, the record information is printed as result of an instruction on the supplier side of the communication, with the paper copy of the

record being mailed to the user subsequently. Alternatively, the transaction record can be transmitted directly to the user as part of the information displayed on the user screen. The information can then be printed by the user using a manual request to print the data on the screen. The common problem shared by all of these methods, is that they are all subject to error when either the user or supplier fails to manually request printing of the transaction information. If no manual request to print is made, the transaction information may be lost and users would be left with no record of their transaction.

SUMMARY

One object of this patent specification is to provide a method of automatically printing transaction information regarding a transaction conducted electronically that is not subject to errors that may occur when a user or a supplier fails to manually request that transaction information be printed.

Another object is to provide a system for automatically printing a hard copy of transaction information relating to a transaction conducted electronically that is free from the above mentioned errors.

Yet another object is to provide a printing apparatus for automatically printing a hard copy of transaction information relating to a transaction conducted electronically free from the previously described problem.

A method of automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user-side and a supplier-side is provided. First a step of automatically identifying, at the user side, without reliance on user action, a selected aspect of information relating to the electronic transaction and thereby generating a print request is performed. In a second step, the print request is sent to a printing apparatus where, in a third step, the printing apparatus prints information regarding the electronic transaction in response to said print request.

According to a second embodiment, a system for automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user-side and a supplier-side is provided. The system includes a control apparatus for automatically identifying on a user side, without reliance on user action, a selected aspect of information regarding the electronic transaction and thereby generating a print request. A communication apparatus transmits the print request to a printing apparatus, and the printing apparatus prints information regarding the electronic transaction in response to the print request.

A printing apparatus for automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user-side and a supplier-side is also provided. The printing apparatus includes a receiver for receiving instructions from a control apparatus, where said

control apparatus automatically identifies, without reliance on user action, a selected aspect of information regarding said electronic transaction and thereby generates a print request to be sent to the printing apparatus. The printing apparatus further includes printing means for printing transaction information regarding the electronic transaction in response to the print request received from the from the control apparatus.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig 1 is a representation of an environment in which electronic transactions occur.

Fig.2 is a flow chart illustrating one embodiment of a method for automatically printing transaction information regarding a transaction conducted electronically between a user-side and a supplier-side.

Fig.3 is a flow chart illustrating operation of step **S1** in **Fig. 2.**

Fig. 4 is a block diagram of a system for automatically printing a hard copy of transaction information regarding a transaction conducted electronically between a user-side and a supplier-side.

Fig. 5 is a block diagram demonstrating construction of a control apparatus included as part of the system displayed in **Fig.4.**

Fig. 6 is a flow chart demonstrating operation of the control apparatus of **Fig. 5.**

Fig. 7 is a block diagram demonstrating construction of a printing apparatus for automatically printing a hard copy of transaction information regarding a transaction conducted electronically between a user-side and a supplier-side.

DETAILED DESCRIPTION

A first embodiment provides a method of automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user-side and a supplier-side and is explained with reference to **Fig 2.** At step **S1**, a selected aspect of information relating to the electronic transaction is identified automatically without reliance on user action, and a print request is automatically generated thereby without requiring a user action seeking printing. The print request is then sent to a printing apparatus **5** at step **S2**. A hard copy of the transaction information relating to the electronic transaction is then printed by the printing apparatus **5** at step **S3.** Steps **S1 - S3** occur automatically without the need

for user intervention, and therefore, avoid any complications that may arise when a user fails to request printing of a hard copy of transaction information.

Step **S1**, automatically identifying a selected aspect of information regarding the electronic transaction and thereby generating a print request, is further explained with reference to **Fig. 3**. At step **SS1** a determination is made as to whether notification of communication between personal computer **1** and a supplier **3** has been conveyed. The supplier **3** maintains or otherwise has access to a server **3a** allowing customers to connect electronically to the supplier **3**. A customer using a personal computer **1** with a web browser accesses the supplier server **3a** of the supplier **3**. The customer activates a "submit" function using the web browser to submit the customer's order to the supplier **3**. Upon activation of this "submit" function, notification is made of communication between the personal computer **1** and the supplier server **3a**. Where no notification has been provided, the process continues to wait for notification. After notification has taken place, the process continues to step **SS2** where communication between the personal computer **1**, or user, and the supplier **3** or supplier server **3a** is monitored. At step **SS3**, it is determined whether a selected aspect of information relating to the electronic transaction sent as part of the communication is

recognized. The selected aspect of information may include but is not limited to, for example, a confirmation number, password, or invoice information. Any indication that transaction information desired by a user of the personal computer **1** should be printed could be used as the selected aspect of information. If no such recognition occurs, monitoring continues. If recognition occurs at step **SS3**, a print request is generated at step **SS4**. The print request may serve to request printing of the selected aspect of information itself, or any transaction information regarding the electronic transaction. For example, if the selected aspect of information recognized in step **SS3** is indeed a confirmation number, printing the confirmation number itself would be useful. If, however, the selected aspect of information recognized in step **SS3** is for example, a standard encoded signal sent by a supplier to indicate that transaction information should be printed, the encoded signal itself need not be printed. In such a case, the print request would request printing of the transaction information only.

While a preferred embodiment of a method for automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user side and a supplier side is disclosed above, other examples are within the scope of this disclosure. For example, a computer terminal **2** connected as part of a LAN **4** may be substituted for the stand-

alone personal computer **1**. In such an embodiment, communication between the computer terminal **2** and a supplier **3** or supplier terminal **3a** is monitored in order to identify the selected aspect of information. Any print request generated is sent to a printing apparatus **6a** connected to the computer terminal **2** via the LAN **4**. A step of storing the printed information regarding the electronic transaction in a storage apparatus **9** can be added to the above described method. This results in both a hard and "soft" copy of the desired transaction information being automatically generated.

Fig. 4 demonstrates a general configuration of a system for automatically printing a hard copy of transaction information regarding a transaction conducted electronically between a user side and a supplier side.

A user uses a personal computer **1** to establish communication with a supplier **3** or supplier terminal **3a** electronically. Control apparatus **5** monitors communications between the user and supplier and attempts to automatically identify, without relying on user action, a selected aspect of information relating to the electronic transaction and thereby generate a print request. The control apparatus **5** then sends the print request to the printing apparatus **6** via a communication apparatus. The printing apparatus **6** prints transaction

information regarding the electronic transaction. Using the above system, transaction records are printed without user intervention whenever an electronic transaction is made. Hence, the problems associated with user or supplier failure to request printing of transaction records are avoided.

In order to facilitate interaction between the control unit **5**, printing apparatus **6** and communication with suppliers **3** it may be useful for printing apparatus manufacturers and the suppliers **3** to establish a contractual relationship as indicated in **Fig 4**. In this manner, the selected aspect of transaction information to be automatically identified so that a print request may be generated can be mutually agreed upon or standardized.

Fig 5 represents a block diagram of the control apparatus **5** included in **Fig 4.** Notification apparatus **10** is notified that communication is occurring between the personal computer **1** and a supplier **3**. Notification apparatus **10** is connected between a customer using personal computer **1** and the server **3a** of the supplier **3**. When the submit function of the web browser on the personal computer **1** is activated as described above, the notification apparatus **10** identifies and receives a "post" command sent from the personal computer **1** to the server of the supplier **3a** indicating posting of the customer's order to the supplier **3** and providing notification of communication between

supplier and customer. The notification apparatus **10** can then cache the html data sent by the supplier server **3a** of the supplier **3** to the personal computer **1** of the customer. Upon notification, monitoring apparatus **11** monitors the communication including the data cached in the notification apparatus and recognizing apparatus **12** recognizes a selected aspect of information relating to the electronic transaction. Only when such recognition occurs, does generating apparatus **13** generate a print request. The control apparatus operates without a need for user intervention, and therefore produces a print request whenever a selected aspect of information is identified regardless of whether a user manually makes such a print request.

The selected aspect of information regarding the electronic transaction may include, but is not limited to, for example a confirmation number, password, or invoice information. The selected aspect of information identified by the control apparatus **5** need not itself be printed. Where the selected aspect of information is, for example, a confirmation number, it would be desirable to create a hard copy of the confirmation number. However, any data or signal that can be recognized and indicates that desired transaction information should be printed can be used as the selected aspect of information recognized by the control apparatus **5**. Where the selected aspect of information is, for example, merely a standard encoded signal

used by the supplier to indicate that desired transaction information should be printed, there is no need to print the actual encoded signal, only the desired information.

Fig. 6 is a flow chart representing an operation of the control apparatus **5** which is substantially that of the identifying step **S1** as described in **Fig. 3** and therefore, the description of that operation will not be repeated.

The preferred embodiment of a system for automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user-side and a supplier-side has been described above, but the disclosure is not limited to this embodiment. The personal computer **1** may be replaced by a computer terminal **2** serving as part of a LAN **4**. In such a case, the printing apparatus **6a** is connected to the computer terminal **2** via the LAN **4**. In addition, the control unit **5** can monitor communications between the computer terminal **5** and the supplier **3** via the LAN **4** and sends the print request to printing apparatus **6a** via the LAN **4**. Another embodiment of an automatic printing system includes a storage apparatus **9** in which the transaction information to be printed can also be stored. In such an embodiment, both a hard and "soft" copy the transaction information are automatically generated without need for user interaction. The storage apparatus can be directly connected to the personal computer **1** or connected to the computer terminal **2**

via the LAN **4**.

Fig 7 is a block diagram representative of a printing apparatus for automatically printing a hard copy of transaction information relating to a transaction conducted electronically between a user side and a supplier side according to one embodiment of the present invention. The printing apparatus is of the type likely to be used in the above described system for automatically printing a hard copy of transaction information. The printing apparatus includes a receiver **7** for receiving directions from a control apparatus **5** and printing means **8**. Control apparatus **5**, automatically identifies without reliance on user action, a selected aspect of information regarding the electronic transaction and thereby generates a print request to be sent to the printing apparatus **6** and received by the receiver **7**. The printing apparatus then prints information regarding the electronic transaction using printing means **8**.

Control apparatus **5** is analogous to the control apparatus shown in **Fig 5** and operates according to the method described in **Fig 3**. Therefore, the description of the construction and operation of control apparatus **5** of the printing apparatus will not be repeated.

In an alternative embodiment, the user can use a computer terminal **2** connected as part of a LAN **4** to communicate with the

suppliers **3**. In such an embodiment, the print request from the control apparatus is sent from the control apparatus **5** to the printing apparatus via the LAN **4**. Th printing apparatus is represented by printing apparatus **6a** in **Fig. 1**, but can have the same construction and operation as described above. A difference would be that directions from the control apparatus **5** received by the receiver **7** would be communicated via the LAN **4** rather than a direct connection.

Several embodiments have been described above, however, it should be clear to one skilled in the art that variations encompassed by the appended claims are possible and such variations are intended to be included in the scope and spirit of this invention.